

-	4	((rhamnose and (cation near "3" exchange)) and weak) and finex	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/25 12:03
-	484	(weak weakly) adj cation	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/25 12:04
-	0	((weak weakly) adj cation) same rhamnose	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/25 12:04
-	10	((weak weakly) adj cation) and rhamnose	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/25 12:08
-	111	((weak weakly) adj cation) and sugar	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/25 15:49
-	131	sequential same continuous same bed	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/25 15:49
-	30	(sequential same continuous same bed) same moving	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/25 15:49
-	2	"20010009136"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 11:24
-	2	"20010009236"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 11:25
-	0	"20010009236" and (weak weakly)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 11:24
-	1	"20010009236" and (xylose rhamnose)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 11:26
-	1	"20030006191"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 11:27
-	1	"20030006191" and (xylose rhamnose weak weakly)\	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 12:50
-	1553	(monosaccharide saccharide) same chromatograph\$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 12:51

L Number	Hits	Search Text	DB	Time stamp
1	842	127/46.2.ccls. 127/46.3.ccls. 127/46.1.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/28 12:37
2	14	(127/46.2.ccls. 127/46.3.ccls. 127/46.1.ccls.) and rhamnose	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/28 12:37
3	3	((127/46.2.ccls. 127/46.3.ccls. 127/46.1.ccls.) and rhamnose) and (weak weakly)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/28 12:39
4	1043151	536/("124" "127" "128" 1.1)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/28 12:40
5	2	536/("124" "127" "128" 1.1).ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/28 12:40
6	1886	536/124.ccls. 536/127.ccls. 536/128.ccls. 536/1.1.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/28 12:41
7	117	(536/124.ccls. 536/127.ccls. 536/128.ccls. 536/1.1.ccls.) and rhamnose	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/28 12:41
8	25	((536/124.ccls. 536/127.ccls. 536/128.ccls. 536/1.1.ccls.) and rhamnose) and (weak weakly)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/28 12:44
9	1221	210/663.ccls. 210/660.ccls. 210/661.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/28 12:44
10	3	(210/663.ccls. 210/660.ccls. 210/661.ccls.) and rhamnose	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/28 12:45
-	2	5998637.pn.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/26 11:23
-	2	5998607.pn.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/24 14:25
-	1404	rhamnose and (cation near "3" exchange)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/25 11:54
-	400	(rhamnose and (cation near "3" exchange)) and weak	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/25 11:54

-	20	((monosaccharide saccharide) same chromatograph\$) same (weak weakly)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 12:59
-	17306	hplc same ph	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 12:59
-	17306	hplc same ph	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 13:00
-	81	(hplc same ph) same weak	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 13:01
-	9	((hplc same ph) same weak) and (weak adj acid)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 14:47
-	0	hplc same (rhamanose and xylose and arabinose)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 14:48
-	0	(hplc same (rhamanose xylose arabinose)) same weak	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 14:48
-	0	(hplc same (rhamanose xylose arabinose)) same weakly	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 14:48
-	0	(hplc same (rhamanose xylose arabinose)) same weak\$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 14:48
-	151	hplc same (rhamanose xylose arabinose)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 14:50
-	44	(hplc same (rhamanose xylose arabinose)) and weak\$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 14:52
-	29	(hplc same (rhamanose xylose arabinose)) and (amberlite finex)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 15:06
-	1065	(weak near 6045593.PN. acid) and hplc and rhamnose	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 15:11
-	364	((weak near 6045593.PN. acid) and hplc and rhamnose) and cation	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 15:07

-	18	((weak near 6045593.PN. acid) and hplc and rhamnose) and cation) and divinyl	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 15:08
-	28	(weak near3 acid) and hplc and rhamnose	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 15:38
-	2	5466294.pn.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 15:50
-	807	chromatography and cation and rhamnose	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 15:51
-	390	(chromatography and cation and rhamnose) and weak\$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 15:52
-	43	(chromatography and cation and rhamnose) and (weak adj acid)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 16:41
-	22	hplc same (rhamnose and xylose)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 16:43
-	10	(hplc same (rhamnose and xylose)) and weak\$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 16:43

# Material Safety Data Sheet

Printing date 09/10/2002

Reviewed on 09/10/2002

## 1 Identification of substance:

- Product details:
- Trade name: Aminex HPX-87P Column
- Catalog or product number: 1250098
- Application of the substance / the preparation Laboratory chemicals
- Manufacturer/Supplier:  
Bio-Rad Laboratories, Life Science Group  
2000 Alfred Nobel Drive  
Hercules, California 94547  
1(510)741-1000
- Information department: Technical services, customer support.
- Emergency information:  
1(800)424-9300 Use only in the event of a CHEMICAL EMERGENCY  
involving a SPILL, LEAK, FIRE, EXPLOSION or ACCIDENT.  
510-741-1000

## 2 Composition/Information on components:

- Chemical characterization:  
CAS No. Description:

69011-20-7 Polystyrene-divinylbenzene sulfonic acid resin

- Identification number(s):
- EU Number: 585-580-01-X

- Chemical characterization

### Listing of dangerous and non-hazardous components:

69011-20-7 Polystyrene-divinylbenzene sulfonic acid resin 50-100 %

7732-18-5 water 35-50 %

EINECS: 231-791-2  
RTECS: ZC 0110000

## 3 Hazards identification

- Information pertaining to particular dangers for man and

**environment**

- not applicable
- **NFPA ratings (scale 0-4)**
  - Health = 0
  - Fire = 0
  - Reactivity = 0

**4 First aid measures**

- **After inhalation**  
Supply fresh air; consult doctor in case of complaints.
- **After skin contact** Generally the product does not irritate the skin.
- **After eye contact**  
Rinse opened eye for several minutes under running water.
- **After swallowing** Induce vomiting and call for medical help.

**5 Fire fighting measures**

- **Suitable extinguishing agents**  
CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Protective equipment:** No special measures required.

**6 Accidental release measures**

- **Person-related safety precautions:** Not required
- **Measures for environmental protection:** No special measures required.
- **Measures for cleaning/collecting:** Pick up mechanically.

**7 Handling and storage**

- **Handling**
- **Information for safe handling:**
  - No special measures required.
  - Prevent formation of dust.
  - No special precautions are necessary if used correctly.
- **Information about protection against explosions and fires:**
  - No special measures required.
- **Storage**
- **Requirements to be met by storerooms and receptacles:**
  - No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** None.
- **Storage class**
- **Class according to regulation on flammable liquids:** Void

## 8 Exposure controls and personal protection

- **Additional information about design of technical systems:**  
No further data; see item 7.

### Components with limit values that require monitoring at the workplace:

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

- **Additional information:**  
The lists that were valid during the creation were used as basis.
- **Personal protective equipment**
- **General protective and hygienic measures**  
Wash hands before breaks and at the end of work.
- **Breathing equipment:**  
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.
- **Protection of hands:**  
Protective gloves.  
Synthetic gloves
- **Material of gloves** Synthetic gloves
- **Penetration time of glove material**  
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
- **Eye protection:** Not required.

## 9 Physical and chemical properties:

- **General Information**

- **Form:** particulate
- **Color:** Light yellow
- **Odor:** Odorless

	<u>Value/Range</u>	<u>Unit</u>	<u>Method</u>
◦			
◦ <b>Change in condition</b>			
◦ <b>Melting point/Melting range:</b>	undetermined		
◦ <b>Boiling point/Boiling range:</b>	undetermined		
◦ <b>Flash point:</b>	Not applicable		
◦ <b>Flammability (solid, gaseous)</b>	Product is not flammable.		
◦ <b>Danger of explosion:</b> Explosive when mixed with oxidizing substances.			
◦ <b>Density:</b>	Not determined		
◦ <b>Solubility in / Miscibility with</b>			

- **Water:** Insoluble
- **Solvent content:**
- **Organic solvents:** 0.0 %
- **Solids content:** 100.0 %

#### **10 Stability and reactivity**

- **Thermal decomposition / conditions to be avoided:**  
No decomposition if used according to specifications.
- **Dangerous reactions** Reacts with strong oxidizing agents
- **Dangerous products of decomposition:**  
No dangerous decomposition products known

#### **11 Toxicological information**

- **Acute toxicity:**
- **Primary irritant effect:**
- **on the skin:** No irritant effect.
- **on the eye:** No irritant effect.
- **Sensitization:** No sensitizing effects known.

#### **12 Ecological information:**

- **General notes:** Not known to be hazardous to water.

#### **13 Disposal considerations**

- **Product:**
- **Recommendation**  
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.  
Hand over to hazardous waste disposers.
- **Uncleaned packagings:**
- **Recommendation:**  
Disposal must be made according to official regulations.

#### **14 Transport information**

- **Land transport ADR/RID (cross-border)**
- **ADR/RID class:** -
- **Maritime transport IMDG:**
- **Marine pollutant:** No

#### **15 Regulations**



- **SARA (Superfund Amendments and Reauthorization Act of 1986 - USA)**  
**Section 302/304 (40CFR355.30 / 40CFR355.40):**

None of the ingredients is listed.

**Section 313 (40CFR372.65):**

None of the ingredients is listed.

**TSCA (Toxic Substances Control Act):**

7732-18-5 water

- **California Proposition 65:**  
**Chemicals known to cause cancer:**

The product does not contain listed components.

**Chemicals known to cause reproductive toxicity:**

The product does not contain listed components.

- **Carcinogenicity categories**  
**EPA (Environmental Protection Agency)**

None of the ingredients is listed.

**IARC (International Agency for Research on Cancer)**

None of the ingredients is listed.

**NTP (National Toxicology Program)**

None of the ingredients is listed.

**TLV (Threshold Limit Value established by ACGIH)**

None of the ingredients is listed.

**MAK (German Maximum Workplace Concentration)**

None of the ingredients is listed.

**NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

**OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

- **Markings according to EU guidelines:**  
The product has been classified and marked in accordance with EU Directives / Ordinance on Hazardous Materials
- **National regulations**
- **Classification according to VbF: Void**

**16 Other information:**

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Department issuing MSDS:** Environmental Health and Safety.

- **Contact:**

Life Science Group, Environmental Health and Safety, 2000 Alfred Nobel Drive, Hercules, California, 94547: 1(510) 741-1000

Diagnostic Group, Environmental Health and Safety, 4000 Alfred Nobel Drive, Hercules, California, 94547: 1(510) 724-7000